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EH-35

The Rongelap Issue

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Throughout 25 years in the Department, I have made a career of defending Federal radiation standards against one kind of encroachment or another. In my opinion, viable Federal Standards developed through a Democratic process such as that of the Federal Radiation Council, uniformly interpreted and applied by all Federal agencies, are extremely important for long-term operation of nuclear facilities. They are critical to public understanding of radiation protection provisions for such operations.

I am presenting some very derogatory information about those who have managed DOE's Marshall Islands Programs. When these programs were transferred to the Nevada Operations Office in 1982, they were enveloped by the same attitude among Headquarters safety staff as for other operations, namely, if Defense Programs manages it, it is not our business. Usually, this just means that no independent safety element in the Department knows very much about what DP's Field Office or contractor is doing. In the case of Rongelap, this indifference is causing additional hardship for people that have already suffered much.

The attached report reviews a chapter in the defense of standards. Regrettably, it chronicles my own failures. The report is long and may appear tedious, but there is much to review to comprehend DOE's involvement in the Rongelap evacuation. For want of a better title I have called it, "The Rongelap Evacuation - DOE's Role." There is also a draft memo to inform Mary Walker of this problem.

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Attachment

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5/16/87

THE RONGELAP EVACUATION - DOE'S ROLE

T.F. McCraw

FORWARD: When the terms NV and NV staff are used, this refers only to those few persons in the Nevada Operations Office who managed the Department's Marshall Islands programs. As for DOE Headquarters, there is nothing good to report for a management system that allowed a few staff with narrow interests and objectives to work in the Marshalls with no overview and to bring such discredit to the Department.

On April 22, 1987, I received a call from Mr. John Sieg of the staff of the National Research Council of the National Academy of Sciences (NRC/NAS) saying several persons had suggested I was knowledgeable of the Rongelap situation. He said his was a preliminary inquiry anticipating that NRC/NAS may be given the job of performing an evaluation of this problem. The Rongelap people through their Government have requested that the NRC advise them on whether they can safely return to their Atoll. Mr. Sieg was trying to determine how much radiological and medical information was available for Rongelap, where this information could be found, and who were the most knowledgeable persons on these subjects. He asked specifically for copies of the Marshallese/English reports and any other summary information.

I told Mr. Sieg I was the Project Officer for the

Department's radiological monitoring and dose assessment activities in the Marshalls from 1967 to 1982 and to the extent possible had followed activities in this area since that time. I briefly reviewed the history of the radiological and medical experience of the Rongelap people, identified the sources of documentation of this history and showed examples, introduced him to the large body of information produced by the technical and medical staff of the Brookhaven National Laboratory (BNL), and gave him names and telephone numbers for knowledgeable persons at BNL who have worked in the Marshall Islands.

I discussed the problem of communicating the significance of radiation exposure estimates to the Marshallese (including the Rongelap people and their leadership), and the relevance of DOE's efforts in this area to the decision the Rongelap people made to leave their Atoll in 1985.

The first purpose of this report is to give DOE safety managers a "heads-up" that when reviewed DOE's performance in providing radiological information to the Marshallese and particularly to the Rongelap people will appear very insensitive and neglectful. The second is to make one last attempt to get DOE to acknowledge and correct a serious mistake in exposure estimates for Rongelap residents. Finally, to inform safety management of a dramatic example where DOE'S de-emphasis of radiation standards as the primary means of communicating the significance and meaning of

radiation exposures was a very serious mistake.

Knowledge of events in the management of DOE's programs in the Marshalls can aid understanding of why the Rongelap people were so fearful and can explain how they could decide to evacuate their homeland.

Following their exposure to radioactive fallout from a U.S. nuclear test in the Pacific in 1954, a Medical Program that would provide early detection of any radiation related injuries for the Rongelap population and also whole body counting was initiated and managed by medical doctors in the Division of Biology and Medicine (DBM). BNL medical doctors provided frequent medical examinations and served as advisors on health issues. A Radiological Program that would provide monitoring data for development of advice for the protection of residents of test impacted atolls to the Department of the Interior (DOI), was developed in the Division of Operational Safety and later transferred to OHER, the successor to DBM. BNL and the Lawrence Livermore Laboratory were funded to do this work. When OHER was transferred to Energy Research both the Medical and Environmental programs and some of the staff that managed them were transferred back to the Office of Operational Safety (OS). OS staff coordinated all radiological advice for the Marshalls with the Federal Radiation Council and later with staff of the Environmental Protection Agency (EPA). Except for the Medical Program where BNL staff worked directly with the people, direct contacts between DOE staff and the Marshallese and their

leaders on health and radiological issues occurred only when requested by DOI and under their supervision. All advice to DOI was thoroughly coordinated within DOE Headquarters.

In 1982 the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness (ASEP), who did not know what he had or why he had it, transferred the Marshall Islands Programs (a six million dollar per year effort), both medical and environmental, to the Assistant Secretary for Defense Programs (ASDP) because of the belief that his staff should perform only safety oversight functions. The ASDP who did not know what he was getting, took the programs having been deluded into the belief that they were somehow related to DOE's "exercise of the expeditionary capability which is an important aspect of Defense Programs Safeguard C" and therefore vital to the U.S. Government. Safeguard C has to do with DOE's readiness to resume atmospheric nuclear testing under a provision of the Limited Test Ban Treaty. Note: those of us who had worked for years in the Marshalls had never realized that what we were doing was so important to national security.

The transfer from ASEP to ASDP did not specify any overview role for ASEP, there was no requirement for coordination of ES&H actions in the Marshalls, and there was no plan for these activities. The ASDP transferred the program to the Deputy for Pacific Operations (DPO) of the Nevada Operations Office (NO) who very much wanted to manage the program. It appears that no consideration was given to

what would be best for the Marshallese in this transfer.

The DFO who preferred to work directly with the Marshallese and their leaders and not with or thru DOI, set about changing the radiological advice and the type of information that would be provided. Advice and recommendations provided previously were based upon the premise that exposures must be controlled within Federal radiation standards and that this was best accomplished with safety rules and recommendations. With the approval of the Director of Operational Safety, the DFO became the spokesman for DOE in the Marshalls. Contacts between Headquarters ES&H staff and DOE contractor staff working in the Marshalls were terminated as was the coordination of advice within the agency and with EPA. DOI staff were no longer involved in the issuance of radiological advice to the Marshallese. NV and its DFO who previously provided logistics assistance West of Honolulu, suddenly became the managers of medical and radiological protection programs that were very important to the health and safety of Marshallese population groups impacted by U.S. nuclear tests including Rongelap. BNL staff deserve a lot of credit for serving successfully as medical and radiological advisors in the Marshalls for more than 25 years, and particularly Dr. Robert A. Conard. Three years after NV's takeover of management of these programs and the communications process, DOE's credibility as technical advisor on radiological matters in the Marshalls was reduced to essentially zero. Again I must emphasize that this is no

reflection on the health physics staff at NV because they had no role in advising the Marshallese.

Inadequate communications with the Rongelapese, the obvious difference between the advice from the DFO and that from BNL staff, failure to recognize that there were pathways where significantly higher levels of long-lived radionuclides could still reach residents of fallout impacted atolls through the diet if dietary restrictions were not followed, the use of exposure estimates derived from dose models when there were more reliable estimates based on BNL in-vivo measurements indicating that the dose model estimates were in error, a faulty judgement of how easily these people could switch from advice based on standards that they understood to concepts of hypothetical risk and probabilistic estimates of health effects to make valid judgements of the risks they would accept, the lack of any independent overview, and misunderstanding and misrepresentation of this program by DOE managers and staff have all played a role. Efforts to be helpful and to allow exposures of the peoples' own choice, all done in an attempt to avoid the restrictions and limitations on use of land and food that would be required under U.S. Federal radiation protection standards, have backfired.

The first attempt to explain radiation, radiation protection, and radiation standards to the Marshallese in their own language, was a Marshallese/English report I issued for Enewetak Atoll in 1975. In a very simplistic form this

report stressed conservative application of Federal radiation standards, and the words "safe" and "safety" appeared where appropriate. The report discussed the possibility of radiation injury but described those actions to be taken to assure safety and presented safety rules. Although the Marshallese had never questioned the validity of use of Federal radiation standards, DOE began to follow a different approach in 1979. Instead of comparing exposure estimates with radiation standards, the Marshallese were given risk values expressed in terms of cancer fatalities and health defects in children.

Marshallese/English reports issued by DOE for Enewetak in 1979, for Bikini in 1980, and for the Northern Marshalls Survey in 1982 that included Rongelap stressed radiation risk and described radiation exposures in terms of increased incidence of cancer, how many residents may die, and how many children may be born with health defects. These reports were the product of Headquarters safety staff. Radiation standards are mentioned but exposure estimates are evaluated only in terms of health effects and there are no recommendations. Throughout the development of these reports I had argued that presenting estimates of cancer deaths and health defects in children would do more to frighten than inform and educate the Marshallese and advised that standards be used instead.

At a series of meetings at Majuro Atoll in December of 1982 between the DFO and leaders of various Marshall Island

populations (I attended as an observer sent by International Affairs), the Marshallese were presented the results of the Northern Marshalls Survey. This showed that exposures to the highest individual living on Rongelap Atoll could be 400 mRem/yr in 1978. I had argued against presenting this value in Majuro because data from a July 1982 BNL field trip to Rongelap showed an average exposure of 61 mRem/yr and the highest individual at 140 mRem/yr. These were much more reliable estimates than that presented.

The Marshallese were surprised when told that foods from restricted islands could be used if needed. This was of great interest to the Rongelap and Enewetak representatives (there were food restrictions for both Atolls) who asked numerous questions trying to learn why the restrictions were being relaxed. This occasion was also used to discourage any further consideration of complying with radiation standards and to substitute a health impact approach to evaluate radiation estimates. In these discussions DOE's representatives stopped talking about safety and the conservative application of radiation standards, talked instead about health effects in children and dying of cancer, and carefully changed DOE's role from advisor to informant. Asked a direct question by a Marshallese, "Does this indicate that these atolls are all within safe standards for people to live on and eat the food", the DFO responded, "We do not normally try to characterize a location as safe or not. It is a matter of amount of risk and the amount of risk is

set forth here". The Marshallese were told they must make their own decision on the risk they would accept.

I should digress and explain about the "conservative application of standards" that was mentioned earlier. In the early 1970's I chaired a Task Group that developed the radiological criteria for cleanup and rehabilitation of Enewetak Atoll. During these deliberations we recognized that the uncertainties in exposure predictions from dose models were large. In the Marshalls this was due primarily to lack of knowledge of the diet. We decided to use a fraction of the Federal standards for planning purposes at Enewetak. Instead of 500 mRem/yr we recommended 250 mRem/yr and instead of 5 Rem in 30 years we recommended 4 Rem. These criteria were published in the Enewetak cleanup Environmental Impact Statement (EIS) that survived Congressional and health agency reviews and were approved and used in this operation. These criteria were not based on consideration of ALARA which is an effort to reduce exposures that are already within the standards to lower levels, but on concerns that basic standards would be exceeded if resettlement plans were based on exposure estimates that turned out to be too low. The restrictions on use of food from certain islands at Rongelap and Enewetak that were relaxed were not just ALARA, they were and are needed to keep exposures within the standards.

The criteria cited above are the only exposure values ever approved through the EIS process for use in the Marshalls. I argued that for planning purposes, which would

include any consideration of remedial measures, radiological criteria should be the same from Atoll to Atoll and that the Enewetak criteria should be used at Rongelap as well. I was ignored. It was clear that the Marshallese in the Majuro meetings were much better informed of what radiological advice they had been given in the past than their DOE visitors.

Upon returning from Majuro I prepared a report to International Affairs with copies to DOE's ES&H and Legal staff stating that this agency's credibility as a source of sound advice on radiological safety in the Marshalls had been seriously damaged and that past radiation protection advice to the Marshallese was changed without Headquarters review or concurrence. In this report I recommended that restrictions on use of food from the northern islands at Rongelap be reinforced and extended, not relaxed, and that DOE should develop a coordinated position with DOI and EPA on this new advice. The DFO objected to my report stating that there was no change in advice to the Marshallese and requested that judgement on the meeting be reserved until an analysis-in-context could be presented. I am still waiting to see this analysis. See memo McCraw to DeFrancis, December 16, 1982, and memo Ray to DeFrancis, January 26, 1983.

In a DOE Health Physics appraisal of NV in April 1984, I recommended that NV consider development of a Marshall Islands Radiological Safety Program Plan containing policy, responsibilities, and requirements. See DOE/PE-0053. This

was intended to raise the issue of DOE's radiation protection policy for the Marshalls which would hopefully focus attention on the changes that were taking place. EPA had already stated that U.S. radiation standards applied in the Marshalls. The recommendation came to nothing because the DFO insisted on issuing not just a plan but a 5-year plan that would commit DP to five more years of funding which they would not accept. I obtained a copy of the draft plan but it was never circulated for review outside DP. The NV Marshall Islands program still operates without a plan and with no independent overview.

When I read about the Rongelap evacuation in May of 1985 I was not surprised these people had left their Atoll, only that it took so long to make the decision to leave. I again laid out the problems in a report to my supervisor in EH, cited some of the factors behind this evacuation and how DOE was implicated, and suggested that a white paper be prepared (and translated into Marshallese) that clarified DOE's position on radiation protection policy in the Marshalls and answered questions about the total radiation experience of the Rongelap people.

After the Rongelap evacuation, the DFO was quoted in the Washington Post as stating, "Radiation levels on Rongelap pose no health threat and are, on the average, lower than in some parts of the U.S. While this is not true if the 400 mRem/yr estimate is used, this was the advice the Rongelap people were looking for in 1982. The Marshall

Islands Journal carried articles on this issue that are very interesting viewed in the context of the 1982 Majuro meeting. See memo McCraw to Vallario, July 22, 1985. Again nothing was done to remedy the situation.

I learned that following the Rongelap evacuation, NV staff decided that no further radiological followup of these relocated people would be provided even though BNL's 1984 collection of data showed body burdens were still elevated. This population has not been whole body counted since leaving their Atoll. BNL medical examinations are continuing as required but NV staff have cancelled the traditional "town meeting", a question and answer session that was always held following these examinations. This certainly has the appearance of retaliation by DOE for the peoples' decision to leave, and is in accord with ridicule of this evacuation by a DOE spokesperson published in the Marshall Islands press. The Marshallese have done some ridiculing of their own. DOE/NV staff working in the Marshalls not only lost their credibility as advisors, but their efforts to communicate have become the subject of bad jokes as well. The Marshallese/English reports with the waterproof paper and stainless steel staples are called "the comic books that are not even good TF".

What must be remembered is that except for the survivors of Hiroshima and Nagasaki, those Rongelapese who were in the fallout on Rongelap Atoll in 1954 are the most exposed and most monitored population anywhere. I believe it is true

that no one has ever explained to the Rongelap people that their radiation exposures are in three components, two in the past and one in the future. From a nuclear test at Bikini in 1954 they received an acute whole body exposure of 175 rads and some children's thyroids received more than a thousand rads from radioiodine. The second component began three years after receiving the acute exposure when they returned to live on their Atoll that fortunately had relatively low residual contamination levels in the South, on their home island, but higher levels on northern islands previously used for food collection. From 1957 until the restrictions were relaxed by the DFO, the Rongelap people were continually urged to observe an unqualified restriction on use of certain foods from these northern islands by BNL staff. There was a steady decline in body burdens of Cs-137 and in chronic whole body exposures at Rongelap since 1965 which was reassuring for them. Following relaxation of this restriction, whole body counting indicated that Rongelap exposures were for the first time increasing and body burdens increased for Enewetak residents as well. Both the Rongelap and Enewetak people and their leaders were knowledgeable of this increase and knew that it was caused by their use of food from restricted islands.

NV staff never admitted that relaxing these restrictions on food was a mistake and never adequately prepared the Rongelap or the Enewetak people to expect that an observable increase in their body burdens would occur with continued use

of food from restricted islands. Whole body counting data documented a significant transient in radiation exposures of Rongelap residents that continued over a period of about three years from 1981 to 1984. According to BNL estimates, Rongelap total exposures had declined to about 100 mRem/yr in 1979. The average adult body burden of Cs-137 then rose to 270 nCi in 1982 which equates to an internal exposure of 90 mRem/yr and a total exposure (external plus internal) of about 120 mRem/yr. See Attachments to Vallario memo. This may be the only case in the history of radiation protection where a dietary restriction that was needed and that effectively limited population exposures was deliberately relaxed and the effect was clearly documented by radiation monitoring data. This was irrefutable evidence that the radiological advice on food restrictions had indeed been changed.

The third component is the exposure to be received in the future. Again I expect that the Rongelap people have never had an adequate explanation of the fact that leaving their Atoll will do nothing to avoid health effects from past exposures and that if the restriction on northern island food is followed they should see no health effects from future exposures living on Rongelap Island. However, I can understand how they would wonder that if 0.4 Rem/yr can produce up to 0.6 fatal cancers and 0.1 children with health defects in the next 30 years, how many health effects are being produced now by the 175 Rem they received in 1954? No

answers have been given to such questions.

I know that some DOE safety managers have preferred not to hear about the past. I know also that there are health physics staff within the Department and its contractors, those that have provided leadership to shift the agencies policy on radiation protection away from compliance with Federal radiation standards and from use of terms such as "safe" and "safety", who would not like to hear about the untoward results of de-emphasizing use of Federal radiation standards in the Marshalls. In my view DOE leadership in radiation protection has been so intimidated by criticism of Federal radiation standards by ultraconservative elements within and outside government, that they have sought refuge in risk reduction and ALARA efforts that leave no room for standards that would imply safe conditions. This can be seen in DOE's Safety Orders and in reports of Health Physics appraisals. Those who are unwilling to put forth the effort to defend the concept of uniform Federal radiation protection standards and to work for a Democratic process where such standards can be defended and revised when needed, deserve to live with the confusion and ever decreasing person-rem goals attendant to ALARA that have no measureable health benefits.

In radiation protection these days the word safety is used only in the title of the Assistant Secretary. DOE's approach to radiation protection is so bound up with concerns for hypothetical risks that we have been unwilling to tell workers or the public (or the Marshallese) what is safe and

what is not. DOE staff have even resorted to efforts to make this agency look good at NRC's expense by claiming that DOE's radiation protection requirements are more conservative than NRC's. This could be the beginning of radiological protection warfare (a competition that DOE can ill afford) that the concept of Federal standards was designed to prevent. I often hear the statement that there can be no standard for a health hazard that has no threshold. This is patently false. There are workable standards for many hazards which have no threshold all the way from highway speed limits to hazardous chemicals. There are also those that claim that Federal standards are minimum requirements. This is also false. These standards are conservatively derived. The risks within the standards are hypothetical. Within the standards increased health effects have not been seen nor is this likely.

Within the Department at the same time working independently and oblivious of what the other was doing, we had radiation protection zealots within EH who de-emphasized Federal standards and introduced into DOE Orders a risk reduction process where the health benefits are nil and no condition is safe, i.e., ALARA, while another group, those who prepared the Marshallese/English reports and those who presented this information to the Marshallese, de-emphasized standards looking for risk acceptance by Marshallese groups as a way of avoiding loss of use of contaminated land and burdensome restrictions on use of contaminated food. Both

groups wanted to avoid use of Federal standards but for different reasons. The Rongelap people are victims of the lack of leadership in radiation protection within DOE Headquarters and of the lack of coordination of radiation protection operations within the agency. The loss of confidence and trust in their DOE advisors made the Rongelap people and their leaders vulnerable to the disruptive influence of others. :

There is another particularly serious and well-known problem within DOE that has hindered this agency's ability to deal with radiological health issues such as those in the Marshalls. In the past there was a high level of cooperation and cordial working relationships between health physics staff in Operational Safety and medical and biological experts conducting health research in OHER. Since OHER was transferred to ER and health physics was transferred to the Office of Nuclear Safety, this relationship has degenerated. It may best be described as somewhere between studious avoidance and abject hatred. This unfortunate clash of personalities and lack of ability to work together is a contributing factor to the vacuum in leadership in radiation protection mentioned previously.

An NRC/NAS review of radiological conditions at Rongelap would be very interesting and most helpful to the Rongelapese. However, I have been informed that the response to the Republic of the Marshall Islands from NRC/NAS says in effect that NRC is a non-profit organization and that

funding would be needed to study the Rongelap problem. I strongly resent the Marshallese having to pay to have this problem evaluated when the errant radiological advice and information from DOE to the Rongelap people is so much the cause of their plight. The radiological data from BNL indicate that if the restrictions on food from the northern islands are followed (the Rongalapese did without the food from the northern islands for more than twenty years), any additional exposures of these people from residual fallout in the southern islands would meet the 170 mRem/yr Federal Regulation and even the 100 mRem/yr criterion recommended by ICRP and NCRP. BNL staff have evaluated all three components of Rongalapese exposures and published the results but this information has never been provided to those who need it most. I have followed these data for many years and have worked closely with BNL staff who have made the measurements. My guess is that the average exposure, internal plus external, would be about 50 to 60 mRem/yr if the Rongalapese returned to their Atoll in 1987 and avoided use of northern island food.

The Rongalap leadership was aware that the resettlement of Bikini Island was aborted in 1978 by DOI because exposures of some individuals approached and in some cases exceeded the 500 mRem/yr Federal standard for individuals. This certainly brought home the importance of radiation standards to the Marshallese. What they could not understand at the Majuro meeting in 1982 (nor can I) was how living on Rongelap Island

with a predicted exposure almost as high (400 versus 500) could be acceptable. To my knowledge this erroneously high value of 400 mRem/yr was never corrected. I presume the people left the Atoll thinking their exposures would be this high and that DOE saw no reason to recommend against acceptance of it. Could this explain why they would believe they were being used like experimental animals? Relaxing the restrictions on use of food and then observing the impact of this change does have the appearance of an experiment. Of course the important consideration is that the BNL estimate of total exposure for the highest individual at that time was 140 mRem/yr without northern island food. There is no reason these people could not live safely on their Atoll if some group they could trust would provide them valid advice. In two years NV has done nothing to remedy this problem.

I urge that DOE should correct its own mistakes and develop a Marshallese/English report that presents the correct information on all three components of Rongelap exposures, one that places this information in proper perspective using radiation standards with emphasis on the continuing need for restrictions on northern island foods. This report should also provide answers to the medical questions that are of concern to these people. BNL medical and radiological staff have the knowledge and competence to prepare such a report and their credibility is still intact. I have not recommended that the Department's management of medical and radiological programs in the Marshalls be

returned to some ES&H office in Headquarters, but that may be a good idea.

Attached is a draft memo to Mary Walker to inform her of this issue. What this surfaces is a gross deficiency in the Department's ability to provide valid radiological protection support to the Marshallese. This experience has relevance outside this obscure place in the Pacific and there are lessons to be learned on how the agency performed so badly and why the Rongelap people reacted so precipitantly. DOE management should know if the de-emphasis of use of Federal radiation standards as an entirely acceptable level of performance for protection of workers and the public is an action that is seriously flawed. The Rongelap experience provides evidence that the language of the alternative to standards that describes radiation exposures as a continuum of risks and health effects is very misleading. Public reaction to this approach may be drastic and unpredictable. My intent is also to make ES&H management aware of DOE's role in the plight of the Rongelap people who are apparently having little success obtaining help elsewhere. These people are resettled on a small island in Kwajalein Atoll that cannot support their needs.

Considering their request to NRC, the Ronglapese are having second thoughts about their relocation and may be open to additional advice. My suggestions and recommendations are motivated by humanitarian concerns hoping that the Department will accept at least a part of the responsibility for this

unhappy and unnecessary situation and try to do something about it.